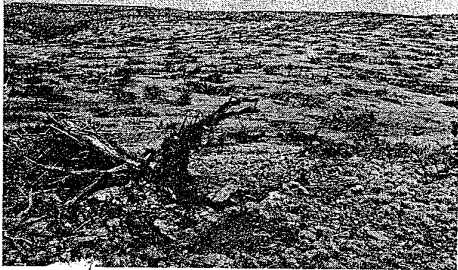


RANGE CONSERVATION - TECHNICAL NOTES

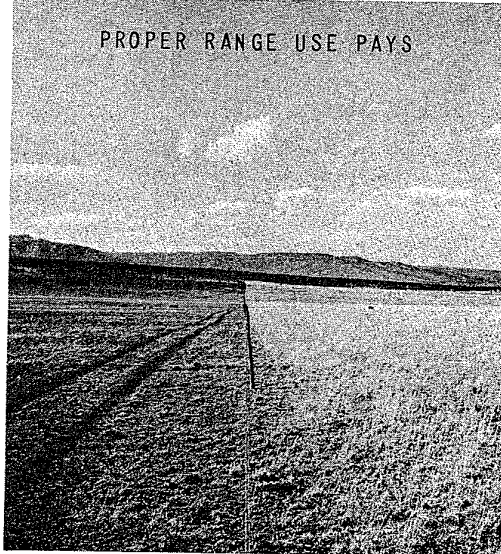
AERIAL CHEMICAL PLANT CONTROL



CHAINING PINON JUNIPER



PROPER RANGE USE PAYS

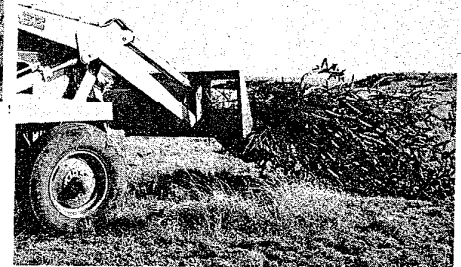


U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NEW MEXICO

GOOD LIVESTOCK WATERING



CHOLLA CONTROL



TECHNICAL NOTE NO. 2

July 26, 1965

SUBJECT: RANGE CAGES

The need for information on herbage yields from rangeland is evident. We must have this information if we are to have a sound basis for management of range sites. Suggested stocking rates, fluctuations in production and utilization data are all necessary information if a well-balanced, satisfactory level of range assistance is to be given ranchers. This information may be hard to acquire unless there is a way to exclude livestock from small areas of grazed pastures. Range cages may be used to solve this problem. They are useful for training technicians and operators to recognize the degree of range use. Their use with all Great Plains producers is desirable.

DESIGN AND CONSTRUCTION

There are several designs that are practical, however, the collapsible types are less bulky and cumbersome to transport. They are also more flexible and the size can be varied to fit the situation. Construction of collapsible range cages utilizes panels of welded wire, hinged together by NO. 9 wire threaded through a series of wire loops at the edge of each panel (See Fig. 1 and 2). A cage 5 feet square accommodates a 9.6 square foot plot; there can be an addition of panels when larger enclosures are desired, as in the case of sparse vegetation or large shrubs (See Fig. 3).

A triangular cage may be constructed from three panels five feet at the base and four and one-half feet tall (See Fig. 1). This will protect an area large enough to accommodate the 11.5 X 24 inch clipping frame. A pyramidal design will increase cage stability, reduce the cost per panel and reduce damage from rubbing by cattle. Cages need to be large enough so vegetation will not protrude through the sloping sides. A 2 X 4 inch mesh is satisfactory for sheep and deer range. A 6 X 6 inch mesh is adequate for cattle. Each side should be secured with a 3/8 inch steel stake with a hook formed at one end (See Fig. 3). With cattle some damage is to be expected, especially if the range is relatively free of trees and cages are located in the areas of livestock concentration.

This design was adapted from an article in the Journal of Range Management by Neil C. Frischknecht and Paul W. Conrad, on pages 33 and 34 of the January 1965 issue.

Another design adapted from Nebraska Range Technical Note No. 12 is constructed as follows:

PROCEDURE:

From full roll of wire, cut off 13 feet if using circular or 16 feet if square (Fig. 4, Step I). If cage is to be used in areas of tall grasses, do not cut but proceed with Step III. If cage is to be used in mid and short grasses, cut this strip lengthwise so you have 2 strips 13 or 16 feet long and 2 feet high (Step II). If building circular cage, join the two ends of the 13' strip and use hog rings to fasten or use the loose wire ends (Step III). If building a square cage, bend the strip at 4' intervals to form a square and then join ends as previously described. Do this with both strips if two cages are needed.

Then, cut two (2) four-foot sections from the roll for tops. (See Step IV). Use hog rings to fasten the top to the upright circle or square portion just constructed (Step V). Place the top on the end with protruding or excess wire so that the bottom welded strip will be flush on the ground. The cage is now complete.

When the cage is put in place, use four of the 12" bridge spikes to hold it firm and snug. (Step VI). Toe the spikes in for a better job. Use the soft wire to fasten the cage to the spikes. Now, walk off and leave it. When transporting, remove the hog rings from top, remove the spikes and flatten the cage for ease in carrying it in vehicle.

MATERIAL:

2--52 foot rolls wire (or 1--100 foot roll) 4 feet high, #12 or heavier, welded, 4 X 2 mesh.
2# soft wire
Heavy wire cutters or fencing pliers
Regular pliers
40--12" bridge spikes
1--Box heavy hog rings
1--Hog ringer.

This furnishes material for 10 cages 2 feet high (circular) minus 1 top; or 6 cages 4 feet high (circular) minus 1 top.

Cost: (Approximate)

#12 1/2 wire \$19.25 (domestic) or \$17.95 (imported) from Sears Roebuck & Co Farm Catalogue. 1/

	\$ 25.50 <u>2/</u>	
Wire cutters	3.85	$\frac{\$34.80}{10} = \3.48 per
Pliers	.75	2' cage
Bridge spikes-15# (or similar material)	3.00	
Hog rings	.25	$\frac{\$34.80}{6} = \5.80 per
Hog ringer	.85	4' cage
2# soft wire	.60	
	<u>\$ 34.80</u>	

1/ 11 gage wire @ \$26.35 is also available.

2/ approximate cost with freight added.

LOCATION

Plots should generally be located in such a manner that all of the vegetation on the site will be represented (i.e.) the average composition should be duplicated as nearly as possible within the cage. Exclosures are to be moved each year and placed on portions of the pastures representative of the use the pasture received the previous year. Range sites with bench mark soils included should receive first consideration.

It is well to remember that rabbits and rodents can have a profound affect on your data. Rabbits may be excluded by covering the bottom two feet of cage with 2-inch mesh chicken wire.

Other information on construction and use of cages for range and pasture plots may be found in the following publications.

Brown, Dorothy. "Methods of Surveying and Measuring Vegetation." Commonwealth Agr. Bureau (Farnham Royal, Bucks, Eng.) Commonwealth Bur. of Pastures and Field Crops Bul. 42. 1954 pp. 115-120

Campbell, J. B. and R. W. Lodge, 1955 "Study Cage for Range and Pasture Studies" Journal Range Mgmt. Vol 8, No 3 pp 128.

Frischknecht, Niel C. and N. P. Plumer, 1949, "A Simplified Technique for Determining Herbage Production on Range and Pastureland" Agron Jour. 41, pp. 63-65.

Heady, H. F. , 1957 "Effect of Cages on Yield and Composition in the California Annual Type" Journal Range Mgmt. Vol 10, No. 4 pp. 175-177.

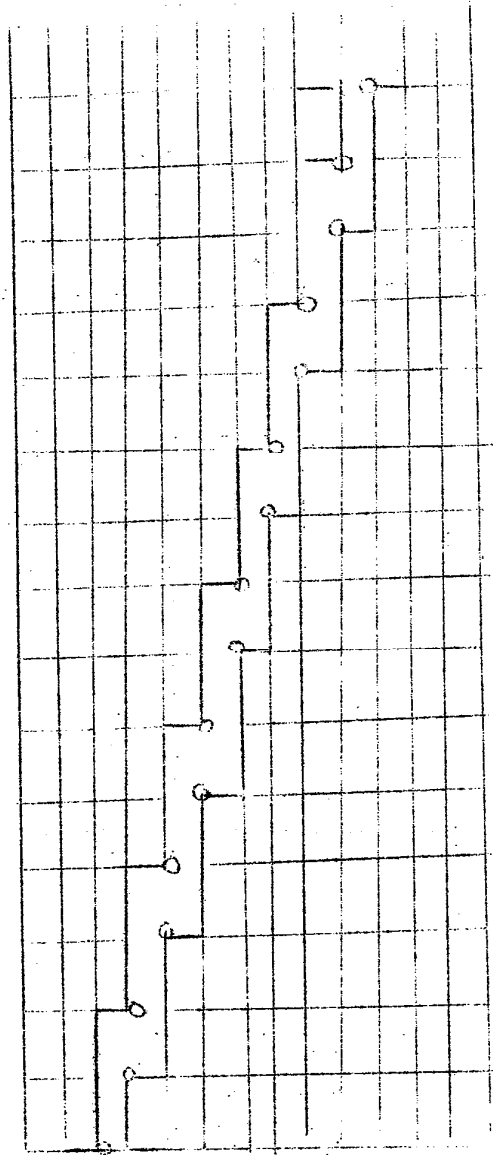
Myers, Robert M. 1960, "Range Utilization Exclosure." Journal Range Mgmt. Vol 13, No. 1, pp. 40.

Robertson, J. H. 1954, "A Low-Cost Portable Cage for Range and Pasture Plots" Journal Range Mgmt. Vol 7, No. 1, pp 42.

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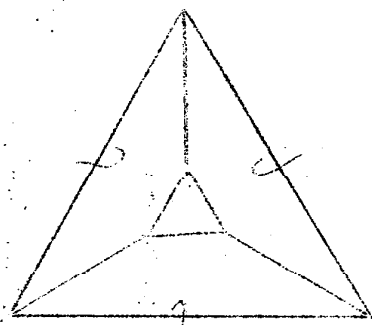
FIGURE 1. Diagram for cutting panels from 6 X 6 inch mesh. Loops are formed from horizontal wires as shown, others are cut off.

FOR USE ON GOATS, SHEEP AND DEER RANGE

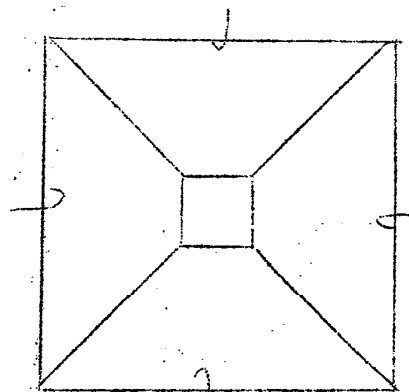


SCALE: 1 cm - 4 inches
2 X 4 inch mesh
11/11 gage, galvanized
45 panels/200 feet

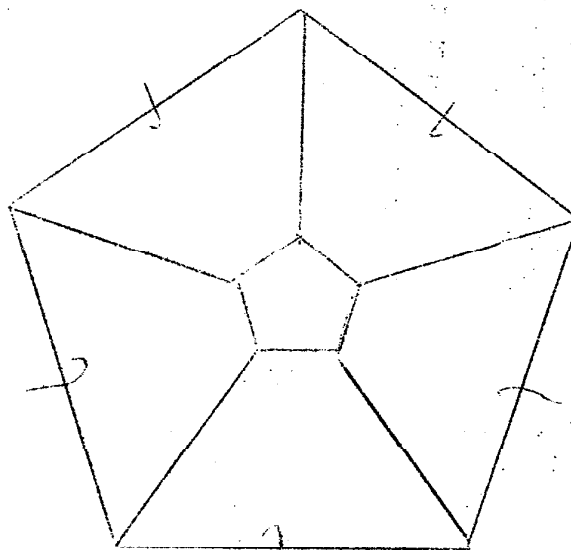
FIGURE 2. Diagram for cutting panels from 2 X 4 inch mesh. Loops are formed from horizontal wires as shown, others are cut off.



(A)



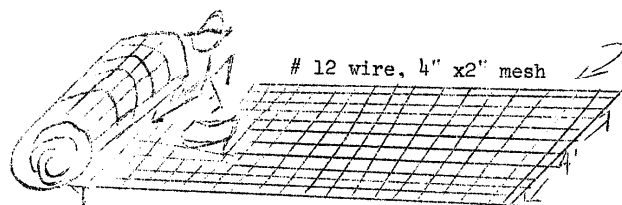
(B)



(C)

SCALE: 1 cm - 1 foot

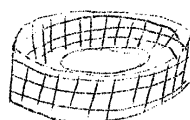
FIGURE 3. Diagrams of 3 possible cage configurations, others may be formed by adding more panels. (A) will accommodate a plot 11.5 X 24 inches. (B) will accommodate a plot 3.1 X 3.1 feet or 4 plots 11.5 X 24 inches. (C) will accommodate a circular plot of 19.2 square feet. Each of the panels is secured to ground by 3/8 inch metal rods 24 inches long with a hook formed on one end.



13' or 16'

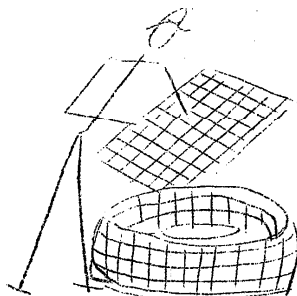
STEP I

Cut strip from roll.



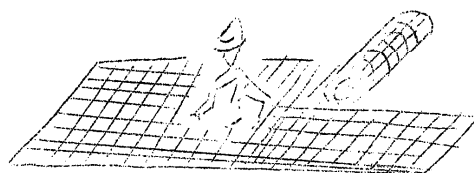
STEP III

Form Circle or Square and Fasten Ends.



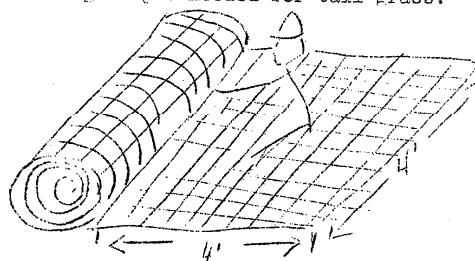
STEP V

Peg Top and Fasten



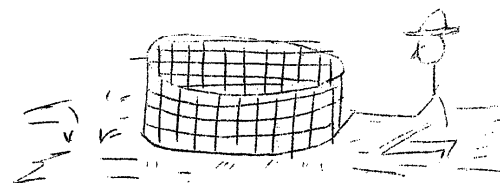
STEP II

Cut strip in two lengthwise for 2' high cages.
Do not cut for 4' high cages needed for tall grass.



STEP IV

Cut Top, 4' Square



STEP VI

Peg cage to Ground

FIGURE 4. Steps used to construct cage in Nebraska Range Technical Note.